Case No.: INFAN-042A

PAPER CUP SIP ADAPTOR

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of U.S. Provisional Application No. 60/432,830, filed Dec. 12, 2002, the entire content of which is hereby incorporated by reference.

FIELD OF THE INVENTION

[0002] The present invention relates generally to drink cups of the type typically used by infants or person with oral impairments that inhibit normal drinking from a cup, and more particularly relates to a sip adaptor specifically sized and configured for retrofit attachment to a conventional paper drink cup.

BACKGROUND OF THE INVENTION

[0003] Most parents of infants and young children are very familiar with drinking cups often referred to as "sippy" or "sip" cups. Sip cups as currently known in the art typically comprises a cup portion which is fabricated from a plastic material and formed in the same general shape as a conventional paper drinking cup. In addition to this cup portion, the sip cup includes a lid which is engageable to the top rim of the cup portion. The lid itself typically includes an elongate spout which protrudes from a peripheral portion of the top surface thereof and includes a flow opening therein which fluidly communicates with the interior of the sip cup. In certain sip cups, the lid is threadably engaged to the cup portion, i.e., the cup portion is formed to include external threads about the rim thereof, with the lid being internally threaded with complementary threads. In other sip cups, the lid is frictionally engaged to the cup portion. The lid of some sip cups

is provided with a valve arrangement which allows liquid to be drawn out of the flow passage of the spout when suction is applied thereto, but otherwise prevents liquid from spilling or dripping out of the spout when the sip cup is turned upside down or on its side and no suction is being applied to the spout.

[0004] In eating establishments where young children or toddlers are often found (e.g., fast-food restaurants, amusement park concession stands, etc.), it is the typical practice that a beverage is provided in a paper drinking cup. The paper drinking cup is typically provided with a plastic lid enclosure on one end thereof to contain the liquid within the cup, the lid enclosure including a slit for accommodating the advancement of a straw therethrough into the interior of the cup. Oftentimes, a toddler cannot be trusted to drink out of the cup/straw arrangement since there is still a high susceptibility for the lid enclosure to be dislodged from the cup and the contents spilling over the toddler. As such, it is a common practice for parents to pour the contents of the paper drinking cup into the cup portion of a sip cup, thereafter re-attaching the lid to the cup portion of the sip cup. The sip cup filled with the beverage is typically easier for the toddler to handle, and has substantially less susceptibility to spillage.

[0005] However, the initial transfer of the beverage from within the paper cup into the cup portion of the sip cup itself creates a susceptibility to accidental spillage. The present invention addresses this problem by providing a paper cup sip adaptor which is specifically sized and configured for retrofit attachment to a conventional paper beverage cup and provides the functional attributes of the lid of a sip cup.

SUMMARY

[0006] The above problems, and others, are resolved by providing an adaptor for a commonly available cup having a longitudinal axis,

the cup having side walls tapered along a length of that axis and having a smaller bottom and forming a larger circular opening with a bead around the opening.

[0007] The adaptor has threads that engage the interior walls of the cup to hold the cup to the adaptor. The adaptor has a recess that cooperates with the bead on the cup to seal the adaptor to the cup. The adaptor has a sippy spout to allow a child to sip from the cup.

[0008] In a further embodiment, the threads can comprise annular rings orthogonal to the longitudinal axis, with the rings (or threads) made of a softer material to better grip the cup and to form a better fluid tight seal as the rings engage the cup. The adaptor can be made of molded plastic, preferably PVC.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] These, as well as other features of the present invention will become more apparent upon reference to the drawings in which like numbers refer to like parts throughout, and wherein:

[0010] Figure 1 is a perspective view illustrating the sip cup adaptor prior to being operatively interfaced to a conventional paper beverage cup;

[0011] Figure 2 is a partial cross sectional view showing the sip cup adaptor of Figure 1, engaged with a cup;

[0012] Figure 3 is a partial sectional view of the sip cup adaptor of Figure 1;

[0013] Figure 4 is a side view of a further embodiment of the sip cup adaptor having handles;

[0014] Figure 5 is a perspective view of a further embodiment of the adaptor of Figure 1;

[0015] Figure 6 is a cross sectional view of the embodiment of Figure 5;

[0016] Figure 7 is a cross section of a further embodiment of

the sip cup adaptor of Figure 1; and

[0017] Figure 8 is a perspective view of a ring containing annular rings or threads as shown in Figures 6 and 7.

DETAILED DESCRIPTION

[0018] Referring now to the drawings wherein the showings are for purposes of illustrating one embodiment of the present invention only, and not for purposes of limiting the same, the subject invention is directed to a sip cup cap 10 which is adapted for retrofit attachment to a conventional paper beverage cup 12. As best seen in Figures 1-3, such conventional beverage cup 12 comprises an outer wall 14 which has a generally frusto-conical configuration. The interior of the walls 14 abut the liquid or other material held in the cup 12. The interior of the walls 14 are not threaded. Extending along the periphery of one end of the outer wall 14 is a continuous, enlarged bead 16 which defines the rim of the beverage cup 12 and that encircles the opening that allows access to the inside of cup.

[0019] In accordance with conventional construction techniques, the bead 16 of the beverage cup 12 has a generally circular cross-sectional configuration, with the diameter of the bead 16 varying with the size of the cup 12. The cup 12, and bead 16, are typically made of a paper-based material coated with a sealant such as wax or plastic, although the entire cup 12 may be made of plastic. Other materials could of course be used to form a fluid container comprising the cup 12, including metals.

[0020] As used herein, the up, upper or top direction or part refers to the relative direction along a longitudinal axis 13 extending from the bottom of the cup 18 toward the top of the cup 12, which direction is generally vertical when the bottom 18 rests on or parallel to the ground. As used herein, the term inner or inward refers to a direction generally toward the inside of the cup 12 and preferably toward a longitudinal axis 13 of the cup 12. The

term outer or outward indicates a direction away from that centerline.

[0021] The sip cup cap 10 of the present invention advantageously comprises a single part that is preferably formed from a single piece of material, and preferably integrally molded from a single piece of material. The cap 10 is preferably made of plastic suitable for use in drinking cups. PVC is believed suitable.

[0022] The cap 10 has a base 20 forming an annular flange extending along longitudinal axis 13 and depending from the cap 10. External threads 22 are formed on the base. The cap 10 has a top wall 24 from which extends outwardly a spout 26. One or more openings 28 extend through a distal end of the spout 26. The spout 26 is in fluid communication with an opening 30 defined by the annular base 20.

[0023] Formed in the cap 10, at the upper portion of the base 20 and the threads 22 is a recess 32 formed by a top wall 36 and an interior side wall 38 and an exterior lip 34. The lip 34 extends around the periphery of the cap and advantageously, but optionally, extends along the longitudinal axis 13 a distance that preferably overlaps and still more preferably extends axially along a substantial length of the interior wall 38.

[0024] During use of the cap 10, the threads 22 on base 20 engage the wall 14 of cup 12 and allow the cap 10 to be screwed into the cup 12 until the bead nests within the recess 32. The engagement of the threads 22 with the wall 14 holds the cup 12 to the cap 10. Further, the threads 22 are preferably, but optionally, continuous threads rather than intermittent threads, as for example threads with vertical separations between groups of threads. The continuous threads are preferred because the threads 22 can for a fluid tight seal with the wall 14 to reduce, or prevent fluid flow out of the cup 12.

[0025] Advantageously, the lip 34 is spaced from the base 20 a

distance smaller than the diameter of the annular bead 12. If the lip 34 is sufficiently flexible, it can "snap" over the bead 34 to realasably hold or releasably lock the bead 16 in the recess 32. Further, as the cap 10 is threaded onto the cup 12, the bead 12 will be forced against the wall of the cup 12 causing the bead 16 to deform and form a seal between the walls defining the recess 32 and the bead 16. The bead 16 preferably deforms against the portion of the cap 10 extending generally orthogonal to the axis 13 and defining the top 36 of the recess 32. That deformation tends to form the bead 16 from a circular-cross sectional shape into an oval cross-sectional shape with a horizontally oriented long axis on the oval, when viewed in the orientation of the Figures. That deformation is preferably slight so as to form a liquid seal between the walls forming the recess 32 and the bead 16.

[0026] Preferably the inner wall 38 is an annular wall having a diameter that is about the same as the diameter at which the interior wall of bead 16 is located. Alternatively, the inner wall 38 of the recess 32 may have a diameter slightly larger than the diameter at which the interior wall of the bead 16 is located. That will cause the bead 16 to deform slightly into an oval shape, with the long axis of the oval being parallel to longitudinal axis 13. The location of inner wall 38 cannot be too much larger than the location of the interior wall of bead 16 or the bead 16 will tear, buckle or deform in a way that does not form a fluid tight seal.

[0027] Preferably the wall 38, top 36 and lip 34 form a curved surface that forms a fluid tight seal with bead 16. A recess 32 having a circular cross-sectional shape to conform to the cross-sectional shape of the bead 16. Thus, the wall 38, top 36 and lip 34 preferably form an annular recess 34 having a circular cross-sectional shape.

[0028] Advantageously, the inner wall 38 has lower portion 40 that extends underneath a portion of the bead 16. That is achieved

by having the lower portion 40 have a diameter larger than the inner diameter of bead 16. That lower portion 40 may be formed by one of the threads 22. Preferably the lower portion 40 helps keep the bead 16 from moving along the direction of axis 13 and slipping out of the recess 32. Alternatively, the lower portion 40 may engage the bead 16 only when the bead is deformed by being forced against the top wall 36, the side wall 38, or both.

[0029] Advantageously, the lip 34 has a distal end that extends underneath a portion of the bead 16. That is achieved by having the distal end of lip 34 located at a diameter smaller than the outer diameter of bead 16. That also requires the distal end of lip 34 to extend beyond the mid-point of the bead 16. Preferably the distal end of lip 34 helps keep the bead 16 from moving along the direction of axis 13 and slipping out of the recess 32. Alternatively, the distal end of lip 34 may engage the bead 16 only when the bead is deformed by being forced against the top wall 36, the side wall 38, or both.

[0030] While the lip 34 is desirable, it is believed to be optional. Thus, the recess could comprise an open groove formed by side all 38 and top wall 36. This is not believed to be as preferable as it is not believed to form as good a seal with the bead 16 as is achieved when the lip 34 engages a lower portion of the outside of bead 16.

[0031] The base 20 preferably extends parallel to the longitudinal axis 13. The walls 14 of the cup 12 are tapered relative to axis 13. As the base 20 is screwed into the cup 12, the base 20 forces the walls 14 to deform away from axis 13 and form a frictional fit that advantageously not only helps hold the cup 12 to the base 20 and cap 10, but that also advantageously forms a fluid seal. The distal or lower end 42 of base 20 preferably has an exterior facing surface that is flat or slightly rounded. That configuration avoids causing the distal end 42 to cut into, cut through, tear, or otherwise adversely damage the wall

14 that about the distal end during use. As the paper or plastic cup 14 is held, the wall 14 will be forced against the exterior of base 20 and distal end 42. The curved, non-sharp shape of the distal end 42 helps avoid damage from repeated abrasion that can arise from repeated grabbing of the cup 12.

[0032] While the annular base 20 preferably extends parallel to longitudinal axis 13, the base 20 may be tapered to better conform to the tapered wall 14 of cup 12. The inclination will vary, depending in part on the radial stiffness of the base 20 and the strength of walls 14 and the length of the base 20 along the longitudinal axis 13. The relative diameters of the wall 14 at the location where the wall abuts the threads 22, and especially where the wall 14 abuts the distal end 42 of base 20, when the bead 16 is placed in the recess 32, must be such that the wall 14 does not get cut or torn during use of the cap 12. The walls 14 may be tapered at an angle θ of from about 5 about to 15 degrees relative to the axis 13. An angle of about 10 degrees is common. The base 20 may be inclined at an angle Δ that is about 5 degrees less, and preferably about 2-3 degrees less than the inclination of the walls 14.

[0033] The spacing between the crests of the threads 22, the shape of the threads (square, inclined, rounded, curved), the inclination of the threads and other aspects of the thread shape will vary. The various factors are selected to achieve a thread 22 that will readily engage the walls 14 and form a sufficient engagement with the un-threaded walls 14 to allow the cup 12 to be held by the cap 10 during use. Advantageously the threads 22 are also configured to provide resistance to fluid passage past the threads 22, and preferably the threads are configured to prevent fluid passage past the threads.

[0034] A wide variety of threads configurations are believed suitable. Threads with flat crests and slight broken edges or

slightly rounded crests are believed suitable because any sharp crests will cut the walls 14 and risk tearing. A square thread with slightly rounded corners on the crests is believed suitable. The spacing between threads is preferably about the same as the diameter of bead 16. A spacing of from about 1/16 to about 5/16 inch is believed suitable for most cups 12. Advantageously there are very few threads 22. Two - three threads are believed suitable, and preferably under five threads. Single lead threads are believed preferable. From one to four turns or rotations of cap 10 are believed suitable to completely fasten the cap 10 to the cup 12, with about 2 turns to fasten the cap being preferred.

[0035] The few turns of the threads 22 results in a fairly short axial length of the base 20. A length of about 3/8 to one inch is believed suitable, with a length of about 3/8 to 3/4 inch believed to be preferable, and that length includes the flat, unthreaded portion adjacent distal end 42.

[0036] The cap 10 may be made of various materials, including metals, but plastic is the preferred material. A PVC material or polycarbonate material is believed suitable. A PVC with a hardness of about 70 Shore A durometer, is believed suitable.

[0037] Referring to Figure 4, in a further embodiment a handle 44 extends from the cap 10 so that the handle or handles 44 can be consistently orientated relative to the spout 38. The handle 44 preferably, but optionally, is slightly curved to provide more room for a child's hands to fit between the handle and the cup 12. The handle 44 thus extends laterally from the cap 10 along an axis radial to a centerline 13 of the cup 12 and then curves to extend along a length of the cup 12. Because the cup 12 is tapered, the handle 44 can extend in a gradual arc without any prominent lateral section as shown in Figure 4. Advantageously, but optionally, the handle 44 extends for about ½ to 3/4 of a length of the cup 12. That allows a child to hold the handle at about the middle of the cup, near the center of gravity of the cup 12. A handle 44

extending a length of about 3-4 inches (76 mm - 100 mm) along the length of a cup 12 is believed suitable.

[0038] The handle 44 is advantageously thick enough so it will not break under use and abuse by a child. A handle 44 with a circular or oval cross section is preferred, and a smooth surface to avoid abrasion. But a textured gripping surface could be provided along the gripping areas of the handle. Knurling or slightly roughened areas along the straight portions are believed suitable.

[0039] Advantageously, there are two handles 44 extending from opposing sides of the cap 10. More than two handles 44 could be formed. If four, equally spaced handles are provided, then the cup 12 can rest on a lower two of the handles while being held by an upper two of the handles by a child. Advantageously the handles 44 are integrally molded with whichever of the cap 10 to which the handles 44 are fastened, but the handles could formed separately and then glued, welded, adhered or fastened to the cap. Alternatively, one or more handles 44 could be fastened or molded to the cap 10. A variety of configurations for a handle 44 could be used and the depicted configuration is given for illustration, not limitation.

[0040] Referring to Figures 5-6, a further embodiment is shown. The threads 22 on the base 20 are formed of a different material than the remainder of the cap 10. Advantageously the threads 22 are of a softer and plastic material than the remainder of the cap 10. Preferably, but optionally, the cap can be molded of hard PVC, while the threads 22 are molded of a softer PVC. The molding can be sequential, or the threads can be formed on an annular ring 45 (Fig. 8) and fit over a mating recess formed in the base 20 of cap 10, and then glued, bonded or otherwise fastened together. The softer threads 22 could be selected to more readily deform when engaged with the cup 12, and thus provide a better fluid seal with the walls 14, and also provide improved gripping of the walls 14.

[0041] Referring to Figure 7, in a still further embodiment, the threads 22 could comprise annular rings 46 that are in planes orthogonal to the longitudinal axis 13 of the cap 10 and cup 12. The rings 46 preferably, but optionally have rounded crests, although flat crests are believed suitable. Because the rings 46 are not inclined to axis 13 as are the threads 22, the rings 46 allow the base 20 to be pushed along axis 13 to engage the rings 46 with walls 14. The rings 46 are shown mounted on a cylindrical base of uniform diameter rather than a tapered diameter. This uniform diameter works well only if the axial length of the rings is short as the taper in the cup 12 may cause enough interference to rip the cup. For most embodiments, a tapered base 20 is preferred, with the taper being approximately the same as the taper of the cup 12, or as further described in this disclosure.

[0042] Those of ordinary skill in the art will recognize that various modifications to the cap 10 may be implemented without departing from the spirit and scope of the present invention. For example, various shaped caps 10 may be formed to include the above-described spout 26, including drip-less spouts and spouts with valve arrangements. Additional modifications and improvements of the present invention may also be apparent to those of ordinary skill in the art. Further, the various features of this invention can be used alone, or in varying combinations with each other and are not intended to be limited to the specific combination described herein. Thus, the particular combination of parts described and illustrated herein is intended to represent only certain embodiments of the present invention, and is not intended to serve as limitations of alternative devices within the spirit and scope of the invention.